

WHAT IS CLAIMED IS:

1. A parking assisting device with which a driver parks a vehicle into a target parking space by performing driving operations in accordance with guidance information, comprising:

image capturing means for capturing at least an image behind the vehicle;

a monitor arranged near a driver seat of the vehicle for displaying the image obtained by the image capturing means;

yaw angle detecting means for detecting a yaw angle of the vehicle;

guiding means for outputting the guidance information regarding the driving operations to the driver; and

a controller for comparing a prescribed yaw angle corresponding to a predetermined vehicle position with the yaw angle of the vehicle detected by the yaw angle detecting means to identify a current position of the vehicle, and providing the guidance information via the guiding means while displaying at least one of a predicted path and a predicted parking position on the monitor so as to overlap with the image obtained by the image capturing means to enable the driver to confirm whether or not the vehicle can be parked into the target parking space by continuing the driving operations in accordance with the guidance information.

2. A parking assisting device according to claim 1, wherein the controller calculates at least one of the predicted path and the predicted parking position of the vehicle to display it on the monitor when the driver operates the vehicle in accordance with the guidance information.

3. A parking assisting device according to claim 1, wherein

the controller displays at least one of the predicted path and the predicted parking position of the vehicle, both being set in advance, when the driver operates the vehicle in accordance with the guidance information.

4. A parking assisting device according to claim 1, wherein the controller gradually moves the display of at least one of the predicted path and the predicted parking position on the monitor such that the display of at least one of the predicted path and the predicted parking position is always at the same position with respect to the image obtained by the image capturing means in accordance with a vehicle movement.

5. A parking assisting device according to claim 1, further comprising predicted parking position display moving means for moving a display of the predicted parking position to the target parking space in the image obtained by the image capturing means on the screen of the monitor, through an operation conducted by the driver,

the controller updating the prescribed yaw angle based on a movement amount of the display of the predicted parking position which is moved by the predicted parking position display moving means and comparing the updated prescribed yaw angle with the yaw angle detected by the yaw angle detecting means to identify the current position of the vehicle and to provide the guidance information for parking assistance.

6. A parking assisting device according to claim 5, further comprising movement amount storing means for storing the movement amount of the display of the predicted parking position which is moved by the predicted parking position display moving means,

the controller displaying at least one of the predicted path and the predicted parking position based on the stored movement amount.

7. A parking assisting device according to claim 1, further comprising predicted parking position selection means for selecting the predicted parking position closest to the target parking space in the image from among a plurality of predicted parking positions displayed on the monitor through an operation conducted by the driver,

the controller displaying the plurality of predicted parking positions on the monitor at slightly different positions from each other, updating the prescribed yaw angle based on the predicted parking position selected by the predicted parking position selection means, and comparing the updated prescribed yaw angle with the yaw angle detected by the yaw angle detecting means to identify the current position of the vehicle and to provide the guidance information for parking assistance.

8. A parking assisting device according to claim 1, wherein, the controller displays at least one of the predicted path and the predicted parking position on the monitor so as to overlap with the image obtained by the image capturing means from a time when parking assistance using the guidance information is started.

9. A parking assisting device according to claim 1, wherein, the controller displays at least one of the predicted path and the predicted parking position on the monitor so as to overlap with the image obtained by the image capturing means from a time when the vehicle advances while maintaining a predetermined steering angle to reach a position where a reverse movement is

started after parking assistance using the guidance information is started.

10. A parking assisting device according to claim 1, wherein:
the controller displays at least one of the predicted path and the predicted parking position on the monitor so as to overlap with the image obtained by the image capturing means before parking assistance using the guidance information is started, and

the vehicle is stopped based on a degree of overlapping of at least one of the displayed predicted path and the displayed predicted parking position with the target parking space in the image to be guided to a position where parking assistance using the guidance information is to be started.

11. A parking assisting device according to claim 10, wherein, the controller provides the guidance information for parking the vehicle by advancing the vehicle from the position where the parking assistance is started while maintaining a predetermined steering angle, steering the vehicle in an opposite direction with the vehicle being stopped, and driving the vehicle backward while maintaining the predetermined steering angle.

12. A parking assisting device according to claim 10, wherein the controller provides the guidance information for parking the vehicle by driving the vehicle backward from the position where the parking assistance is started while maintaining the predetermined steering angle.

13. A parking assisting device according to claim 1, wherein the controller provides the guidance information for parking the vehicle by advancing the vehicle while maintaining a predetermined

steering angle to reach a position where a reverse movement is started, steering the vehicle in an opposite direction with the vehicle being stopped and driving the vehicle backward while maintaining the predetermined steering angle.

14. A parking assisting device according to claim 13, wherein:

the controller calculates at least one of the predicted path and the predicted parking position in the case where parking operations are conducted after parking assistance in accordance with the guidance information is started and before the vehicle reaches a position where a reverse movement is started, and displays at least one of the calculated predicted path and the calculated predicted parking position onto the monitor so as to overlap with the image obtained by the image capturing means,

the vehicle is stopped based on a degree of overlapping of at least one of the displayed predicted path and the displayed predicted parking position with the target parking space in the image to be guided to the position where the reverse movement is to be started.

15. A parking assisting device according to claim 1, wherein the image capturing means includes rear view image capturing means for capturing the image behind the vehicle and side image capturing means for capturing an image on a side of the vehicle.